CLAIMS

1. Disc drive apparatus (1) for optical discs (2), comprising:
a frame (3);
a sledge (10) displaceably mounted with respect to said frame (3);
a lens actuator (43, 21) displaceably mounted with respect to said sledge (10);
a control unit (90) for generating a control signal (S_{CL}) for the lens actuator (43, 21);

wherein the control unit (90) is designed, during a jump operation, to generate said control signal (S_{CL}) for the lens actuator (43, 21) at least partly on the basis of an actuator deviation signal (S_{AS}) representing a difference between actuator position (X_A) and sledge position (X_S).

2. Apparatus according to claim 1, further comprising an optical detector (35) generating a read signal (S_R), wherein the control unit (90) is designed to derive said actuator deviation signal (S_{AS}) from said read signal (S_R).

3. Apparatus according to claim 2, wherein said control unit (90) comprises processing means (48) for generating a one-spot push-pull error signal (S_{PP}) from said read signal (S_R), and wherein the control unit (90) is designed to derive said actuator deviation signal (S_{AS}) from said one-spot push-pull error signal (S_{PP}).

4. Apparatus according to claim 2 or 3, wherein said control unit (90) comprises processing means (47) for generating an XDN error signal (S_{XDN}) from said read signal (S_R), and wherein the control unit (90) is designed to derive said actuator deviation signal (S_{AS}) from said XDN error signal (S_{XDN}).

5. Apparatus according to claim 3 or 4, wherein said control unit (90) comprises low-pass filter means (50) for performing a low-pass filter operation on said error signal (S_{PP};

S_{XDN}), and wherein an output signal of said filter means (50) is used as said actuator deviation signal (S_{AS}).

6. Apparatus according to claim 2, wherein said control unit (90) comprises: first processing means (47) for generating an XDN error signal (S_{XDN}) from said read signal (S_R);

second processing means (48) for generating a one-spot push-pull error signal (S_{PP}) from said read signal (S_R);

a controllable switch (49) having inputs coupled to outputs of said first processing means (47) and said second processing means (48), respectively;

low-pass filter means (50) having an input coupled to an output of said controllable switch (49);

wherein an output signal of said filter means (50) is used as said actuator deviation signal (S_{AS}).

7. Apparatus according to any of the previous claims, wherein said control unit (90) comprises a control circuit (60; 160; 260; 360) having an input (61) receiving said actuator deviation signal (S_{AS}) and having an output (69) providing said lens actuator control signal (S_{CL});

the control circuit (60; 160; 260; 360) comprising a proportional branch (62) generating a control signal contribution proportional to said actuator deviation signal (S_{AS}).

8. Apparatus according to claim 7, wherein said control circuit (60) further comprises:

an adder (64) having an output connected to said circuit output (69);

a first amplifier (63) having an input coupled to said circuit input (61) and having an output coupled to an input of said adder (64).

9. Apparatus according to claim 8, wherein said control circuit (60) further comprises:

a differentiating circuit (66) having an input coupled to said circuit input (61); a second amplifier (67) having an input coupled to an output of said differentiating circuit (66) and having an output coupled to an input of said adder (64).

10. Apparatus according to claim 8, further comprising:

an optical detector (35) generating an optical read signal (S_R);

a setpoint generator (92) generating a sledge motor drive signal (S_{CS});

wherein said control circuit (160) further comprises:

processing means (72) having an input coupled to receive said read signal (S_R), and designed to process the optical read signal (S_R) for generating an actuator displacement signal (S_{AD}) indicating the displacement of the actuator (21) with respect to tracks of the disc (2);

a zero-crossings counter (73) having an input coupled to an output of said processing means (72), and designed to generate an output signal (S73) representing the number of zero-crossings per unit time;

a low-pass filter (74) having an input coupled to an output of said zero-crossings counter (73);

a subtractor (75) having an inverting input coupled to an output of said low-pass filter (74), having a non-inverting input coupled to receive said sledge motor drive signal (S_{CS}), and having an output coupled to an input of said adder (64).

11. Apparatus according to claim 10, wherein said control circuit (160) further comprises a third amplifier (77) having an input coupled to an output of said subtractor (75) and having an output coupled to an input of said adder (64).

12. Apparatus according to claim 9 and any of claims 10-11, wherein said control circuit (260) further comprises:

a second controllable switch (80) having has a first input coupled to the output of second amplifier (67), having a second input coupled to the output of said subtractor (75) or said third amplifier (77), respectively, and having an output coupled to an input of said adder (64).

13. Apparatus according to claim 7, wherein said control unit (90) is designed, in a jump mode, to generate its actuator control signal (S_{CL}) such as to cause an oscillating movement of the lens actuator (43, 21) corresponding to a track shape.

14. Apparatus according to any of the claims 7-13, wherein said control unit (90) comprises a shape memory (310) containing track shape information, and wherein the control unit (90), in a jump mode, is designed to read track shape information from said shape memory (310) and to generate a tracking repetitive control signal (S_{TRC}) on the basis of the track shape information in said shape memory (310);

wherein said control circuit (360) further comprises:

a tracking repetitive control adder (301) having an input coupled to an output of said first adder (64), having another input coupled to receive said tracking repetitive control signal (S_{TRC}), and having an output coupled to said circuit output (69).

15. Apparatus according to claim 14, wherein the control unit (90), in a jump mode, is designed to read track shape information from said shape memory (310) and to generate a compensating repetitive control signal (S_{CRC}) on the basis of the track shape information in said shape memory (310);

wherein said control circuit (360) further comprises:

a tracking repetitive control subtractor (302), having a non-inverting input coupled to said circuit input (61), having an inverting input coupled to receive said compensating repetitive control signal (S_{CRC}), and having an output coupled to the input end of said proportional branch (62).

16. Apparatus according to claim 14 or 15, wherein the control unit (90) is designed to write track shape information into said shape memory (110) when the control unit (90) is in a track following mode.

17. Method for controlling a lens actuator (43, 21) during a jump, wherein a control signal (S_{CL}) for said lens actuator (43, 21) is generated at least partly on the basis of an actuator deviation signal (S_{AS}) representing a difference between actuator position (X_A) and a sledge position (X_S).

18. Method for generating an actuator deviation signal (S_{AS}) representing a difference between actuator position (X_A) and a sledge position (X_S), wherein a read signal (S_R) is received from an optical detector (35), wherein a one-spot push-pull error signal (S_{PP}) is generated from said read signal (S_R), and wherein said actuator deviation signal (S_{AS}) is derived from said read signal (S_R), for instance by performing a low-pass filter operation on said error signal (S_{PP}).

19. Method for generating an actuator deviation signal (S_{AS}) representing a difference between actuator position (X_A) and a sledge position (X_S), wherein a read signal (S_R) is received from an optical detector (35), wherein an XDN error signal (S_{XDN}) is generated from said read signal (S_R), and wherein said actuator deviation signal (S_{AS}) is derived from said XDN error signal (S_{XDN}), for instance by performing a low-pass filter operation on said XDN error signal (S_{XDN}).